

INFORMATION DISCLOSURE CITATION SHEET (Use several sheets if necessary)			Docket Number (Optional) WP 21720 (RDID 04099 US)		Application Number 10/816,298		
Applicant(s): Bergmann et al			Filing Date: April 1, 2004		Group Art Unit: TBD		
U.S. PATENT DOCUMENTS							
Examiner Initials	Ref	Document Number	Date	Name	Class	Subclass	Filing Date (If Appropriate)
JR		2002/0165389	11/7/02	Vinayak et al.			
		2002/0165372	11/7/02	McGall et al.			
		4,458,066	7/3/84	Caruthers et al.			
		4,996,143	2/26/91	Heller et al.			
		5,002,867	3/26/91	Macevicz			
		5,130,238	7/14/92	Malek et al.			
		5,130,238	7/14/92	Malek et al.			
		5,130,446	7/14/92	Musso et al.			
		5,143,854	9/1/92	Pirrung et al.			
		5,202,231	4/13/93	Drmanac et al.			
		5,210,015	5/11/93	Gelfand et al.			
		5,314,893	5/24/94	Tino et al.			
		5,451,463	9/19/95	Nelson et al.			
		5,487,972	1/30/96	Gelfand et al.			
		5,516,785	5/14/96	Zoltewicz et al.			
		5,545,522	8/13/96	Van Gelder et al.			
		5,565,322	10/15/96	Heller			
		5,607,922	3/4/97	DeClercq et al.			
		5,668,113	9/16/97	DeClercq et al.			
		5,804,375	9/8/98	Gelfand et al.			
		5,849,489	12/15/98	Heller			
		5,891,636	4/6/99	Van Gelder et al.			
		6,022,963	2/8/00	McGall et al.			
		6,103,476	8/15/00	Tyagi et al.			
		6,130,323	10/10/00	Su et al.			
		6,156,501	12/5/00	McGall et al.			
		6,162,603	12/19/00	Heller			
		6,174,670	1/16/01	Wittwer et al.			
		6,291,170	9/18/01	Van Gelder et al.			
JR		6,344,316	2/5/02	Lockhart et al.			
FOREIGN PATENT DOCUMENTS							
	Ref	Document Number	Date	Country	Class	Subclass	Translation
JR		DE 39 43 522 A1	2/7/91	Germany			
		EP 0 135 587 B2	12/18/02	EUROPE			
		EP 0 313 219 B1	5/8/96	EUROPE			
		EP 0 439 182 B1	7/31/91	EUROPE			
		EP 0 468 352 A2	1/29/92	EUROPE			
		EP 0 476 014 B1	3/25/92	EUROPE			
		EP 0 646 125 B1	4/5/95	EUROPE			
JR		EP 1 251 168 A1	10/23/02	EUROPE			

JR		EP 1 251 179 A2	10/23/02	EUROPE			
		EP 1 254 962 A1	11/6/02	EUROPE			
		WO 00/06771	2/10/00	PCT			
		WO 00/58493	10/5/00	PCT			
		WO 01/02417 A1	1/11/01	PCT			
		WO 01/18003 A1	3/15/01	PCT			
		WO 01/37291 A1	5/25/01	PCT			
		WO 01/49687	7/12/01	PCT			
		WO 01/85220	11/15/01	PCT			
		WO 02/072779	9/19/02	//			
		WO 02/12263 A1	2/14/02	//			
		WO 02/18406	3/7/02	//			
		WO 89/10977	11/16/89	//			
		WO 89/11548	11/30/89	//			
		WO 90/01069	2/8/90	//			
		WO 90/15070	12/13/90	//			
		WO 91/15488	10/17/91	//			
		WO 92/00989	1/23/92	//			
		WO 92/02638	2/20/92	//			
		WO 92/08808	5/29/92	//			
		WO 92/10092	6/25/92	//			
		WO 93/17020	9/2/93	//			
		WO 93/17126	9/2/93	//			
		WO 93/25565	12/23/93	//			
		WO 96/05213	2/22/96	//			
		WO 96/41811	12/27/96	//			
		WO 97/27317	7/31/97	//			
		WO 97/30064	8/21/97	//			
		WO 97/43451	11/20/97	//			
		WO 98/25943	6/18/98	//			
JR		WO 99/15509	4/1/99	//			
Other Documents (Including Author, Title, Date, Pertinent Pages, Etc.)							
JR		Abramson, R.D., Myers, T.W., "Nucleic Acid Amplification Technologies", Current Opinion in Biotechnology 1993, 4:41-47					
		Allart, B., Busson, R., Rozenski, J., Van Aerschot, A., Herdewijn, P., "Synthesis of Protected D-Altritol Nucleosides as Building Blocks For Oligonucleotide Synthesis", Tetrahedron 55 (1999) 6527-6546					
		Allart, B., Khan, K., Rosemeyer, H., Schepers, G., Hendrix, C., Rothenbacher, K., Seela, F., VanAerschot, A., Herdewijn, "D-Altritol Nucleic Acids (ANA): Hybridisation Properties, Stability, and Initial Structural Analysis", Chem. Eur. J., 1999, 5, No. 8, pp 2424-2431					
		Andersen, M.W., Dalage, S.M., Kerremans, L., Herdewijn, P., "The Synthesis of Modified D- and L- Anhydrohexitol Nucleosides", Abstract: 1996					
		Arango, J.H., Geer, A., Rodriguez, J., Young, P.E., Scheiner, P., "Cyclohexenyl Nucleosides and Related Compounds", Nucleosides & Nucleotides, 12(7), 773-784 (1993)					
		Atkins, D., Miller, M., DeBouvere, B., VanAerschot, A., Herdewijn, P., "Evaluation of the cellular uptake of hexitol nucleic acids in HeLa cells", Pharmacology 55, (2000), pp 615-617					
		Barany, F., "Genetic Disease Detection and DNA Amplification Using Cloned Thermostable Ligase", Proc. Natl. Acad. Sci. USA, Vol. 88, January 1991, pp 189-193					
JR		Barany, F., "The Ligase Chain Reaction in a PCR World", PCR Methods and Applications, 1:5-16, 1991					

JR		Beaucage, S.L., Caruthers, M.H., "Deoxynucleoside Phosphoramidites – A New Class of Key Intermediates for Deoxypolynucleotide Synthesis", <i>Tetrahedron Letters</i> , Vol. 22, No. 20, pp 1859-1862, 1981
		Boudou, V., Kerremans, L., DeBouvere, B., Lescrinier, E., Schepers, G., Busson, R., VanAerschot, A., Herdewijn, P. "Base pairing of anhydrohexitol nucleosides with 2,6-diaminopurine, 5-methylcytosine and uracil as base moiety", <i>Nucleic Acids Research</i> , 1999, Vol. 27, No. 6, pp 1450-1456
		Brown, E.L., Belagaje, R., Ryan, M.J., Knorana, H.G. "Chemical Synthesis and Cloning of a Tyrosine tRNA Gene", <i>Methods in Enzymology</i> , Vol. 68, 1979, pp 109-151
		Brown, S.G., King, B.F., Kim, Y.C., Jang, S.Y., Burnstock, G., Jacobson, K.A., "Activity of Novel Adenine Nucleotide Derivatives as Agonists and Antagonists at Recombinant Rat P2X Receptors", <i>Drug Development Research</i> , 49:253-259 (2000)
		DeBouvere, B., Kerremans, L., Rozenski, J., Janssen, G., Aerschot, A.V., Claes, P., Busson, R., Herdewijn, P. "Improved Synthesis of Anhydrohexitol Building Blocks for Oligonucleotide Synthesis", <i>Liebigs Ann./Recueil</i> , 1997, 1453-1461
		DeWinter, H., Lescrinier, E., Van Aerschot, A., Herdewijn, P. "Molecular Dynamics Simulation to Investigate Differences in Minor Groove Hydration of HNA/RNA Hybrids As Compared to HNA/DNA Complexes", <i>J. Am. Chem. Soc.</i> , 1998, 120, 5381-5394
		Froeyen, M., Wroblowski, B., Esnouff R., DeWinter, H., Allart, B., Lescrinier, E., Herdewijn, P. "Molecular-Dynamics Studies of Single-Stranded Hexitol, Altritol, Mannitol, and Ribose Nucleic Acids (HNA, MNA, ANA, and RNA, Resp.) and of the Stability of HNA-RNA, ANA-RNA, and MNA-RNA Duplexes", <i>Helvetica Chimica Acta</i> , Vol 83, (2000), 2153-2182
		Garegg, P.J., Regberg, T., Stawinski, J., Stromberg, R., "Formation of Internucleotidic Bonds via Phosphonate Intermediates", <i>Chemica Scripta</i> 1985, 25, 280-282
		Giegrich, H., Eisele-Buhler, S., Hermann, C., Kvasnyuk, E., Charubala, R., Pfeiderer, W., "New Photolabile Protecting Groups in Nucleoside and Nucleotide Chemistry – Synthesis, Cleavage Mechanisms and Applications", <i>Nucleosides & Nucleotides</i> , 17(9-11), 1987-1996 (1998)
		Guatelli, J.C., Whitfield, K.M., Kwok, D.Y., Barringer, K.J., Richman, D.D., Gingeras, T.R., "Isothermal, in vitro amplification of nucleic acids by a multienzyme reaction modeled after retroviral replication", <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 87, pp 1874-1878, March 1990
		Hendrix, C., Rosemeyer, H., Verheggen, I., Seela, F., Van Aerschot, A., Herdewijn, P., "1'5'-Anhydrohexitol Oligonucleotides: Synthesis, Base Pairing and Recognition by Regular Oligodeoxyribonucleotides and Oligoribonucleotides", <i>Chem. Eur. J.</i> , 1997, 3, No. 1, pp 110-120
		Hendrix, C., Rosemeyer, H., Verheggen, I., Seela, F., Van Aerschot, A., Herdewijn, P., "1'5'-Anhydrohexitol Oligonucleotides: Hybridisation and Strand Displacement with Oligoribonucleotides, Interaction with RNase H and HIV Reverse Transcriptase", <i>Chem. Eur. J.</i> , 1997, 3, No. 9, pp 1513-1520
		Herdewijn, P., Doboszewski, B., Verheggen, I., Van Aerschot, A., "1,3,4-Substituted pyranosyl-like oligonucleotides", <i>Nucleic Acids Symposium Series</i> , No. 31, pp 161-162, 1994
		Hoheisel, J.D., "Oligomer-chip technology", <i>TIBTECH</i> , November 1997, Vol. 15, pp 465-469
		Hossain, N., Wroblowski, B., Van Aerschot, A., Rozenski, J., DeBruyn, A., Herdewijn, P., "Oligonucleotides Composed of 2'-Deoxy-1',5'-anhydro-d-mannitol Nucleosides with a Purine Base Moiety", <i>J. Org. Chem.</i> 1998, 63, 1574-1582
		Jung, K.E., Kim, K., Yang, M., Lee, K., Lim, H., "Synthesis and Hybridization Properties of Oligonucleotides Containing 6-Membered Azasugar Nucleotides", <i>Bioorganic & Medicinal Chemistry Letters</i> 9, (1999), 3407-3410
		Katagiri, N., Ito, Y., Shiraishi, T., Maruyama, T., Sata, Y., Kaneko, C., "Deamination of 9-(Hydroxymethylated Cycloalkyl)-9H-Adenines (Carbocyclic Adeninonucleosides) by Adenosine Deaminase: Effect of High-Pressure Upon Deamination Rate and Enantioselectivity", <i>Nucleosides & Nucleotides</i> , 15(1-3), 631-647 (1996)
JR		Konkel, M.H., Vince, R., "Synthesis and Biological Activity of Cyclohexenyl Nucleosides, cis-5-

JR		(9H-Purin-9-YL)-3-Cyclohexenyl Carbinols and Their 8-Azapurinyl Analogs", Nucleosides & Nucleotides, 14(9&10), 2061-2077 (1995)
		Konkel, M.J., Vince, R., "Cyclohexenyl Nucleosides: Synthesis of cis-4-(9H-Purin-9-yl)-2-cyclohexenylcarbinols", Tetrahedron, Vol. 52, No. 3, pp 799-808, 1996
		Kozlov, I.A., DeBouvere, B., Van Aerschot, A., Herdewijn, P., Orgel, L.E., "Efficient Transfer of Information from Hexitol Nucleic Acids to RNA during Nonenzymatic Oligomerization", J. Am. Chem. Soc. 1999, 121, 5856-5859
		Kozlov, I.A., Politis, P.K., Pitsch, S., Herdewijn, P., Orgel, L.E., "A Highly Enantio-Selective Hexitol Nucleic Acid Template for Nonenzymatic Oligoguanylate Synthesis", Journal of the American Chemical Society, Vol. 121, No. 5, pp 1108-1109, 1999
		Kozlov, I.A., Politis, P.K., Van Aerschot, A., Busson, R., Herdewijn, P., Orgel, L.E., "Nonenzymatic Synthesis of RNA and DNA Oligomers on Hexitol Nucleic Acid Templates: The Importance of the A Structure", Journal of the American Chemical Society, Vol. 121, No. 12, March 31, 1999, pp 2653-2656
		Kozlov, I.A., Zielinski, M., Allart, B., Kerremans, L., Van Aerschot, A., Busson, R., Herdewijn, P., Orgel, L.E., "Nonenzymatic Template-Directed Reactions on Altritol Oligomers, Preorganized Analogues of Oligonucleotides", Chem. Eur. J. 2000, 6, No. 1, pp 151-155
		Kwoh, D.Y., Davis, G.R., Whitfield, K.M., Chappelle, H.L., DiMichele, L.J., Gingeras, T.R., "Transcription-based amplification system and detection of amplified human immunodeficiency virus type 1 with a bead-based sandwich hybridization format", Proc. Natl. Acad. Sci. USA, Vol. 86, February 1989, pp 1173-1177
		Lescrinier, E., Esnouf, R., Schraml, J., Busson, R., Heus, H.A., Hilbers, C.W., Herdewijn, P., "Solution structure of a HNA-RNA hybrid", Chemistry & Biology 2000, 7:719-731
		Lescrinier, E., Esnouf, R.M., Schraml, J., Busson, R., Herdewijn, P., "Solution Structure of a Hexitol Nucleic Acid Duplex with Four Consecutive T-T Base Pairs", Helvetica Chimica Acta, Vol. 83, (2000), 1291-1310
		Luyten, I., Herdewijn, P., "Synthesis and Conformational Behavior of Purine and Pyrimidine B-D-threo-Hex-3'-enopyranosyl Nucleosides", Tetrahedron, Vol. 52, No. 27, pp 9249-9262, 1996
		Maurinsh, Y., Rosemeyer, H., Esnouf, R., Medvedovici, A., Wang, J., Ceulemans, G., Lescrinier, E., Hendrix, C., Busson, R., Sandra, P., Seela, F., Van Aerschot, A., Herdewijn, P., "Synthesis and Pairing Properties of Oligonucleotides Containing 3-Hydroxy-4-hydroxymethyl-1-cyclohexenyl Nucleosides", Chem. Eur. J. 1999, 5, No. 7, pp 2139-2150
		Maurinsh, Y., Schraml, J., DeWinter, H., Blaton, N., Peeters, O., Lescrinier, E., Rozenski, J., Van Aerschot, A., DeClercq, E., Busson, R., Herdewijn, P., "Synthesis and Conformational Study of 3-Hydroxy-4-(Hydroxymethyl)-1-Cyclohexenyl Purines and Pyrimidines", J. Org. Chem., 1997, 62, 2861-2871.
		Narang, S.A., Hsiung, H.M., Brosseau, R., "Improved Phosphotriester Method of the Synthesis of Gene Fragments", Methods in Enzymology, Vol. 68, 1979, pp 90-98
		Ostrowski, T., Wroblowski, B., Busson, R., Rozenski, J., DeClercq, E., Bennett, M.S., Champness, J.N., Summers, W.C., Sanderson, M.R., Herdewijn, P., "5-Substituted Pyrimidines with a 1,5-Anhydro-2,3-dideoxy-d-arabino-hexitol Moiety at N-1: Synthesis, Antiviral Activity, Conformational Analysis, and Interaction with Viral Thymidine Kinase", J. Med. Chem. 1998, 41, 4343-4353.
		Perez, M.J., DeClercq, E., Herdewijn, P., "Synthesis and Antiviral Activity of 2-Deoxy-1,5-Anhydro-D-Mannitol Nucleosides Containing a Pyrimidine Base Moiety", Bioorganic & Medicinal Chemistry Letters, Vol. 6, No. 13, pp 1457-1460, 1996
		Perez, M.J., Rozenski, J., Busson, R., Herdewijn, P., "Application of the Mitsunobu-Type Condensation Reaction to the Synthesis of Phosphonate Derivatives of Cyclohexenyl and Cyclohexenyl Nucleosides", J. Org. Chem., 1995, 60, 1531-1537
JR		Pochet, S., VanAerschot, A., Herdewijn, P., Marliere, P., "Replicative Capability of Anhydrohexitol Analogues of Nucleotides", Nucleosides & Nucleotides, 18 (4&5), 1015-1017

		(1999)
JR		Pravdic, N., Zidovec, B., Franjic, I., Fletcher, Jr., H.G., "Catalytic Hydrogenation of Some 2-Acetamindoaldose Derivatives", <i>Croatica Chemica Acta</i> 45 (1973), pp 343-356
		Ramesh, K., Wolfe, M.S., Lee, Y., VanderVelde, D., Borchardt, R.T., "Synthesis of Hydroxylated Cyclohexenyl- and Cyclohexanyladenines as Potential Inhibitors of S-Adenosylhomocysteine Hydrolase", <i>J. Org. Chem.</i> 1992, 57, 5861-5868
		Rosenquist, A., Kvarnstrom, I., "Synthesis of Enantiomerically Pure Bis (hydroxymethyl)-Branched Cyclohexenyl and Cyclohexyl Purines as Potential Inhibitors of HIV", <i>J. Org. Chem.</i> 1996, 61, 6282-6288
		Su, S.H., Iyer, R.S., Aggarwal, S.K., Kalra, K.L., "Novel Non-Nucleosidic Phosphoramidites for Oligonucleotide Modification and Labeling", <i>Biorganic & Medicinal Chemistry Letters</i> , Vol. 7, No. 13, pp 1639-1644, 1997
		Torimura, M., Kurata, S., Yamada, K., Yokomaku, T., Kamagata, Y., Kanagawa, T., Kurane, R., "Fluorescence-Quenching Phenomenon by Photoinduced Electron Transfer between a Fluorescent Dye and a Nucleotide Base", <i>Analytical Sciences</i> , January 2001, Vol. 17, 2001, 155-160
		Uhlmann, E., Peyman, A., "Antisense Oligonucleotides: A New Therapeutic Principle", <i>Chemical Reviews</i> , Vol. 90, No. 4, June 1990, pp 544-584
		VanAerschot, A., Verheggen, I., Herdewijn, P., "Synthesis of nucleoside analogues with a 1,5-anhydrohexitol moiety", <i>Bioorganic & Medical Chemistry Letters</i> , Vol. 3, No. 6, pp 1013-1018, 1993
		Vandermeeren, M., Preveral, S., Janssens, S., Geysen, J., Saison-Behmoaras, E., VanAerschot, A., Herdewijn, P. "Biological Activity of Hexitol Nucleic Acids Targeted at Ha-ras and Intracellular Adhesion Molecule-1 mRNA", <i>Biochemical Pharmacology</i> , Vol. 59, pp. 655-663, 2000
		Vastmans, K., Kerremans, L., Hendrix, C., VanAerschot, A., Pochet, S., Marliere, P., Herdewijn, P. "Recognition of 1,5-Anhydrohexitol Adenine Triphosphate by a DNA Polymerase", <i>Collection Symposium Series</i> , Vol. 2, 1999, pp 156-160
		Vastmans, K., Pochet, S., Peys, A., Kerremans, L., VanAerschot, A., Hendrix, C., Marliere, P., Herdewijn, P. "Enzymatic Incorporation in DNA of 1,5-Anhydrohexitol Nucleotides", <i>Biochemistry</i> , Vol. 39, No. 42, pp 12757-12765, 2000
		Vastmans, K., Rozenski, J., VanAerschot, A., Herdewijn, P. "Recognition of HNA and 1,5-anhydrohexitol nucleotides by DNA metabolizing enzymes", <i>Biochimica et Biophysica Acta</i> 1597 (2002) 115-122
		Verheggen, I., VanAerschot, A., Rozenski, J., Janssen, G., DeClercq, E., Herdewijn, P., "Synthesis of 1,5-Anhydrohexitol Nucleosides as Mimics of ATZ, D4T and DDC+", <i>Nucleosides & Nucleotides</i> , 15(103), 325-335 (1996)
		Verheggen, I., VanAerschot, A., Toppet, S., Snoeck, R., Janssen, G., Balzarini, J., DeClercq, E., Herdewijn, P. "Synthesis and Antiherpes Virus Activity of 1,5-Anhydrohexitol Nucleosides", <i>Journal of Medicinal Chemistry</i> , 1993, 36, pp 2033-2040
		Verma, S., Eckstein, F., "Modified Oligonucleotides: Synthesis and Strategy for Users", <i>Annu. Rev. Biochem.</i> 1998, 67:99-134
		Wang, J., Froeyen, M., Hendrix, C., Andrei, G., Snoeck, R., DeClercq, E., Herdewijn, P. "The Cyclohexene Ring System as a Furanose Mimic: Synthesis and Antiviral Activity of Both Enantiomers of Cyclohexenylguanine". <i>J. Med. Chem</i> 2000, 43; 736-745
		Wang, J., Herdewijn, P., "Enantioselective Synthesis and Conformational Study of Cyclohexene Carbocyclic Nucleosides". <i>J. Org. Chem.</i> 1999, 64, 7820-7827
		Wang, J., Verbeure, B., Luyten, I., Froeyen, M., Hendrix, C., Rosemeyer, H., Seela, F., VanAerschot, A., Herdewijn, P. "Cyclohexene Nucleic Acids (CeNA) Form Stable Duplexes With RNA and Induce RNase H Activity", <i>Nucleosides, Nucleotides & Nucleic Acids</i> , 20(4-7), 785-788 (2001)
JR		Wang, J., Verbeure, B., Luyten, I., Leschinier, E., Froeyen, M., Hendrix, C., Rosemeyer, H., Seela, F., VanAerschot, A., Herdewijn, P., "Cyclohexene Nucleic Acids (CeNA): Serum Stable

JR		Oligonucleotides that Activate RNase H and Increase Duplex Stability with Complementary RNA", J. Am. Chem. Soc. 2000, 122, 8595-8602
		Whelen, A.C., Persing, D.H., "The Role of Nucleic Acid Amplification and Detection in The Clinical Microbiology Laboratory", Annu. Rev. Microbiol. 1996, 50: 349-373
JR		WU, D.Y., Wallace, R.B., "The Ligation Amplification Reaction (LAR) – Amplification of Specific DNA Sequences Using Sequential Rounds of Template-Dependent Ligation", Genomics 4, 560-569 (1989)
Examiner		Date Considered
/Jezia Riley/		12/14/2006
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.		

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